LACEWINGS AND AQUATIC INSECTS OF NEW ZEALAND

3. Fauna of Poor Knights Islands

K. A. J. WISE

AUCKLAND INSTITUTE AND MUSEUM

Abstract. Results from a December 1980 expedition to Tawhiti Rahi Island, Poor Knights Islands, are given together with other known records and information for the island group. Although these islands are known for endemic species amongst other insects, none have been recognised amongst the lacewings and aquatic insects specifically determined so far.

The terrestrial arthropod fauna of the Poor Knights Is has been discussed and listed by Somerfield (1973), Kuschel (1982), Watt (1982) and Court (1983). In number two of the present series (Wise 1983), the lists included previously published records (one species only) and specimens recorded below for these islands.

The Poor Knights Is comprise two main islands, the northern Tawhiti Rahi I and the southern Aorangi I, and several islets, *ca.* 20 km off the eastern coast of North Auckland, north of the Whangarei Harbour. Tawhiti Rahi I is elongate with ephemeral streamlets on a forested northern plateau and a larger stream, lower down, almost traversing the island to Shag Bay and bordering the more open land at the southern end (see description and maps in Hayward & Hayward 1983).

The present author accompanied the Entomology Division (D.S.I.R.) expedition to the cliff-ringed Tawhiti Rahi I in late 1980, the camp being sited, above one of the few landing spots, on a ledge in Shag Bay.

Even though it was still early summer (1-11 December 1980) the southern stream had stopped flowing, although it had been flowing well in September that year (J.C. Watt pers comm.). Several pools remained in the stream bed so specimens recorded here are mainly from these.

Above the low cliffs to the sea were two larger pools, designated 'bottom pool' and 'crossing pool', and four smaller ones, 'A', 'B', 'C', 'D', all within *ca.* 20 m where there was little gradient. Bottom pool (1 m in length) and crossing pool (2 m in length) were shaded stagnant pools in rock, both containing leaf and branch debris and with a strong smell. The fauna included large populations of mosquito larvae (2 species) together with midge and beetle larvae, and pond skaters on the surface. Of the small

pools, A was in rock, shaded and containing leaves, B in soil and completely shaded, C in rock, a shallow open pool, and D in rock, 1 m deep and open. The fauna of the shaded pools A and B included mosquito larvae (1 species) and beetle larvae, of the open pools C and D, beetle larvae and pond skaters.

Further up the stream bed above a flax patch and below the junction (*ca.* 100 m from the cliffs) was a clear partly shaded pool in rocks which contained a few beetle larvae and small mosquito larvae (not collected), and also the only Ceratopogonid and Tabanid larvae taken.

A few other aquatic species were collected either as adults or immatures. The sea coast also provided records of marine caddis flies and coastal mosquitoes. Two species of lacewings were collected on Tawhiti Rahi I during the expedition.

Specimens were collected and/or determined by the author and are in the Auckland Museum collection (AMNZ) unless otherwise indicated. Some are in the New Zealand Arthropod Collection (NZAC), Entomology Division.

ODONATA

COENAGRIONIDAE

Ischnura aurora aurora (Brauer, 1865)

Tawhiti Rahi I: Shag Bay, 1.XII.1980 (1♀).

This species, previously recorded by Wise (1983) from this adult specimen, may be only an occasional visitor from the mainland as noted for other islands (Wise 1983: 260).

HEMIPTERA

VELIIDAE

Microvelia macgregori (Kirkaldy, 1899)

Tawhiti Rahi I: main stream, pool, 3.XII.1980 (3), bottom pool, 10.XII.1980 (17), crossing pool, 10.XII.1980 (9), pool C, 10.XII.1980 (4), pool, 10.XII.1980 (6).

Wise (1983) recorded the species from these specimens which include both adults and immatures.

NEUROPTERA

HEMEROBIIDAE

Drepanacra binocula (Newman, 1838)

Tawhiti Rahi I: below lighthouse, in forest, 8.XII.1980 (1♂), plateau 200 m, main track, swept, 8.XII.1980 (1♂).

(NZAC). Tawhiti Rahi I: ex *Beilschmedia,* 7.XII.1980 (1♂), 8.XII.1980 (1♂), G. Kuschel.

Previously recorded (Wise 1983) on the basis of these specimens and is probably established.

Micromus tasmaniae (Walker, 1860)

Tawhiti Rahi I: plateau 200 m, swept, 2.XII.1980 (3♀♀), plateau, main track, swept, 7.XII.1980 (1♀), lighthouse area 150 m, swept, 8.XII.1980 (1♂).

(NZAC). Tawhiti Rahi I: pan trap in bush, 2-10.XII.1980 (1♂), window trap in bush, 2-10.XII.1980 (1♀), Tawa knoll, swept at night, 9.XII.1980 (1♀), M.F. Tocker; SE. track, malaise trap in bush, 3-10.XII.1980 (1♂), RH. Kleinpaste; on *Xeronema,* 2.XII.1980 (1♀), 8.XII.1980 (2♂♂ 1♀), ex *Phormium tenax* swamp, 10.XII.1980 (2♂♂ 1♀), G. Kuschel; rushes, *Cassinia,* swept, 11.XII.1980 (1♀), C.F. Butcher. Aorangi I: 30 m above camp, to light, 10.XI.1981 (1♀), Crater valley saddle, at night, 13.XI.1981 (2♀♀), Crater Bay, forest N. side, at night, 15.XI.1981 (1♀), Crater Bay, malaise trap in coastal scrub, 11-16.XI.1981 (3♀♀), J.S. Dugdale.

Previously recorded (Wise 1983) from these adults and is probably established.

Immature. (NZAC). Tawhiti Rahi I: N. track, beating *Corynocarpus laevigatus,* at night, 7.XII.1980 (1 larva), C.F. Butcher.

This larva is not yet specifically determined.

COLEOPTERA

SCIRTIDAE (= HELODIDAE)

Immatures. Tawhiti Rahi I: main stream, pool, on dead leaves, 3.XII.1980 (8 larvae), pool D, 6.XII.1980 (1 larva), bottom pool, 10.XII.1980 (2 larvae), crossing pool, 10.XII.1980 (4 larvae), pool A, 10.XII.1980 (5 larvae), pool B, 10.XII.1980 (9 larvae), pool C, 10.XII.1980 (9 larvae), pool D, 10.XII.1980 (32 larvae), upper stream bed pool, 11.XII.1980 (1 larva).

The record of this family by Wise (1983) was given for these aquatic larvae which are easily recognised.

Cyphon sp. (Det. by J.C. Watt)

Tawhiti Rahi I: main stream, swept, 1.XII.1980 (4), above stream below crossing, swept, 4.XII.1980 (1), by stream, 6.XII.1980 (1), upper stream bed, swept, 11.XII.1980 (1).

These non-aquatic beetles may not be adults of the aquatic larvae but are included for the record.

HYDROPHILIDAE

Cercyon haemorrhoidalis (Fabricius) (Det. by R.G. Ordish)

Tawhiti Rahi I: main stream, on surface of pool, 4.XII.1980 (1).

Many species of this family are aquatic but this beetle is of a non-aquatic species which, however, is included for the record. Other non-aquatic beetles were also found on pools.

DIPTERA

CULICIDAE

Culex (Culex) pervigilans Bergroth, 1889

Tawhiti Rahi I: main stream, bottom pool, 10.XII.1980 (many larvae), crossing pool, 10.XII.1980 (many larvae).

The two pools recorded contained very large numbers of mosquito larvae which were obviously of two species. However, no adults of this species were taken and the record by Wise (1983) was based on these larvae.

Opifex fuscus Hutton, 1902

Tawhiti Rahi I: E. track, at light, 6.XII.1980 (1♂), landing, rock pool above HWM, 11.XII.1980 (58 ♂♂ 20 larvae).

(NZAC) (Det. by T.K. Crosby)
Tawhiti Rahi I: camp, 6-8.IX.1980 (1♀), R. Grace; Shag Bay, 6-11.IX.1980 (1♀), J.C. Watt; Shag Bay, pan trap, 3-10.XII.1980 (2♂♂), landing 8.XII.1980 (2♂♂ many imm.), rock pool, 9.XII.1980 (11♂♂), M.F. Tocker; to light, 6.XII.1980 (1♀), Tawa knoll, to light, 8.XII.1980 (2 ♀♀), R.H. Kleinpaste. Aorangi I: -.XI.1981 (2♂♂ 2 ♀♀), J.S. Dugdale.

This is the widespread coastal mosquito previously recorded for Poor Knights Is by Somerfield (1973), Watt (1982) and, from the above AMNZ specimens, by Wise (1983).

Aedes (Ochlerotatus) antipodeus (Edwards, 1920)

Tawhiti Rahi I: by stream, swept, 1.XII.1980 (2♂♂ 2 ♀♀), lower main track, 2.XII.1980 (1♀), by stream, at light, 4.XII.1980 (5 ♀♀), main stream, bottom pool, 10.XII.1980 (1 ♂ 5 larvae), crossing pool, 10.XII.1980 (many larvae), pool A, 10.XII.1980 (2 larvae), pool B, 10.XII.1985 (14 larvae).

(NZAC) (Det. by T.K. Crosby)
Tawhiti Rahi I: vegetation, 4.XII.1980 (4♂♂), C.F. Butcher; main stream, stagnant pools, swept, 5.XII.1980 (2♂♂ 1♀), N. track, swept, 6.XII.1980 (6♂♂ 1♀), M.F. Tocker; *Phormium tenax* swamp, 10.XII.1980 (5♂♂ 2 ♀♀), G. Kuschel.

Wise (1983) recorded the species from the AMNZ specimens above.

CHIRONOMIDAE (Det. by D. Forsyth)

Chironomus zealandicus Hudson, 1892

Tawhiti Rahi I: by stream, at light, 4.XII.1980 (1♀), main stream, bottom pool, 10.XII.1980 (2 larvae, 1 larval exuviae, 1 pupa), crossing pool, 10.XII.1980 (3 larvae).

Bloodworms were numerous in bottom deposits of these pools.

Gressittius antarcticus (Hudson, 1892)

Tawhiti Rahi I: main stream, pool D, 10.XII.1980 (2 larvae).

Pentaneura sp.

Tawhiti Rahi I: main stream, crossing pool, 10.XII.1980 (1 larva).

Polypedilum sp.

Tawhiti Rahi I: by stream, swept, 1.XII.1980 (1♂).

This and the following Diptera families have not previously been recorded for the Poor Knights Is.

CERATOPOGONIDAE (Det. by D. Forsyth)

Forcipomyia sp.

Tawhiti Rahi I: main stream, upper stream bed pool, 11.XII.1980 (1 larva).

SCIOMYZIDAE

Tawhiti Rahi I: main stream, crossing pool, 10.XII.1980 (1 larva).

TABANIDAE

Tawhiti Rahi I: main stream, upper stream bed pool, 11.XII.1980 (1 larva).

Other Families

Several other undetermined larvae were taken in the stream bed pools. On the surface of pools were many small flies of the families Psychodidae, Sciaridae, Dolichopodidae, Stratiomyidae, Sphaeroceridae, Chloropidae and Helomyzidae but it is not known which of these may have aquatic larvae.

TRICHOPTERA

RHYACOPHILIDAE

Tiphobiosis plicosta McFarlane, 1960

Tawhiti Rahi I: by stream, at light, 4.XII.1980 (1♂).

This single adult may have been blown from the mainland as there was no sign of freshwater caddis larvae, but it could have been a late emergence if there had been larvae in the flowing stream.

CHATHAMIIDAE

Philanisus plebeius Walker, 1852

Tawhiti Rahi I: Shag Bay, camp, 1.XII.1980 (4♂♂), Shag Bay, camp, at light, 1.XII.1980 (10 ♂♂ 1 ♀), on shore, at light, 3.XII.1980 (3♂♂ 2 ♀♀), Shag Bay, at light, 5.XII.1980 (1♂), Shag Bay, at light, 9.XII.1980 (3♂♂).

(NZAC). Aorangi I: bush above camp, to light, 9.XI.1981 (1♂), J.S. Dugdale.

The common marine caddis fly was recorded from the above specimens by Wise (1983).

Discussion

The main stream at the southern end of Tawhiti Rahi I was found to be ephemeral and was not flowing at the time of the December 1980 expedition. Immatures of the aquatic Orders Ephemeroptera, Odonata, Plecoptera, Megaloptera and Trichoptera were not found.

Comments on the lacewing and aquatic insect faunas of the northern offshore islands made by the author previously (Wise 1983: 267) apply to the Poor Knights Is fauna. Although the Poor Knights are known for endemic species amongst some insects, mainly Orthoptera and Coleoptera, none has yet been recognised amongst the present group. All the determined species occur also on the North Island mainland. Two winged specimens, a damselfly and a caddis fly may have been wind-borne visitors from the same source.

Acknowledgements. The invitation to join the Entomology Division, D.S.I.R., expedition is much appreciated as are the assistance given by other expedition members and loans of specimens.

Drs J.C. Watt and T.K. Crosby, Entomology Division, Auckland, Dr D. Forsyth, Division of Marine and Freshwater Science, Taupo, and Mr R. G. Ordish, National Museum, Wellington, kindly examined some of the specimens and supplied information.

REFERENCES

COURT, D. J.
1983 Spiders from Tawhiti Rahi, Poor Knights Islands, New Zealand. *J. R. Soc. N.Z.* 12(4): 359-371.

HAYWARD, B. W., and G. C. HAYWARD
1983 Lichens of Tawhiti Rahi, Poor Knights Islands, northern New Zealand. *J. R. Soc. N.Z.* 12.(4): 373-379.

KUSCHEL, G.
1982 Apionidae and Curculionidae (Coleoptera) from the Poor Knights Islands, New Zealand. *J. R. Soc. N.Z.* 12(3): 273-282.

SOMERFIELD, K. G.
1973 Insects from the Poor Knights Islands, New Zealand. *Proc. N.Z. Ecol. Soc.* 20: 53-57.

WATT, J. C.
1982 Terrestrial arthropods from the Poor Knights Islands, New Zealand. *J. R. Soc. N.Z.* 12(3): 283-320.

WISE, K. A. J.
1983 Lacewings and aquatic insects of New Zealand. 2. Fauna of the northern offshore islands. *Rec. Auckland Inst. Mus.* 20: 259-271.